

FIG. 1

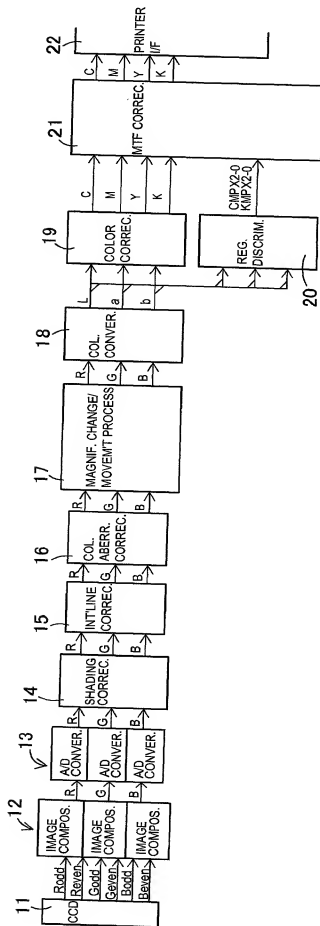


FIG. 2

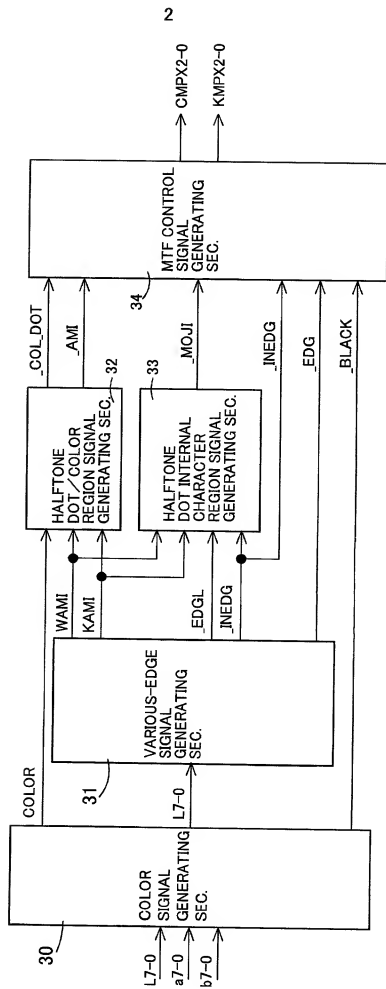


FIG. 3

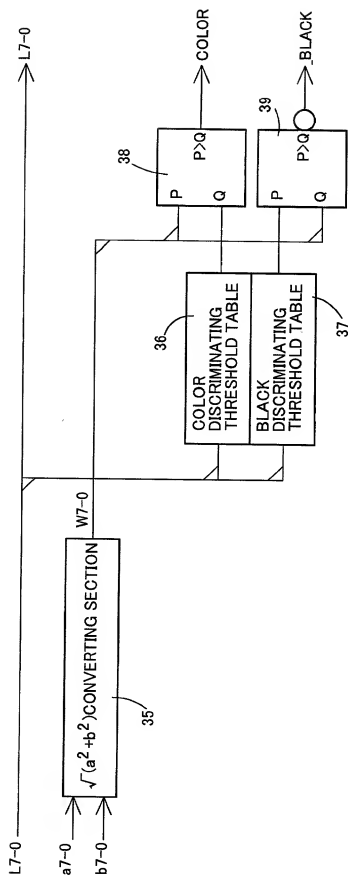


FIG. 4

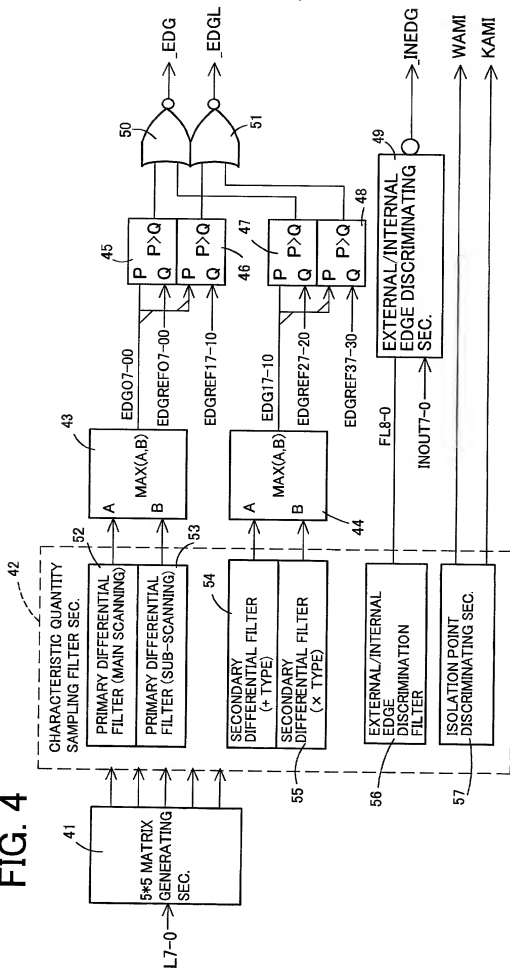


FIG. 5

PRIMARY DIFFERENTIAL FILTER
(MAIN SCANNING DIRECTION)

16	0	0	0	-16
32	32	0	-32	-32
32	64	0	-64	-32
32	32	0	-32	-32
16	0	0	0	-16

FIG. 6

PRIMARY DIFFERENTIAL FILTER
(SUB-SCANNING DIRECTION)

16	32	32	32	16
0	32	64	32	0
0	0	0	0	0
0	-32	-64	-32	0
-16	-32	-32	-32	-16

FIG. 7

SECONDARY DIFFERENTIAL FILTER
(+ TYPE)

0	0	1	0	0
0	0	0	0	0
1	0	-4	0	1
0	0	0	0	0
0	0	1	0	0

FIG. 8

SECONDARY DIFFERENTIAL FILTER
(\times TYPE)

1	0	0	0	1
0	0	0	0	0
0	0	-4	0	0
0	0	0	0	0
1	0	0	0	1

FIG. 9

EXTERNAL/INTERNAL EDGE
DISCRIMINATING FILTER

1	0	1	0	1
0	0	0	0	0
1	0	-8	0	1
0	0	0	0	0
1	0	1	0	1

FIG. 10

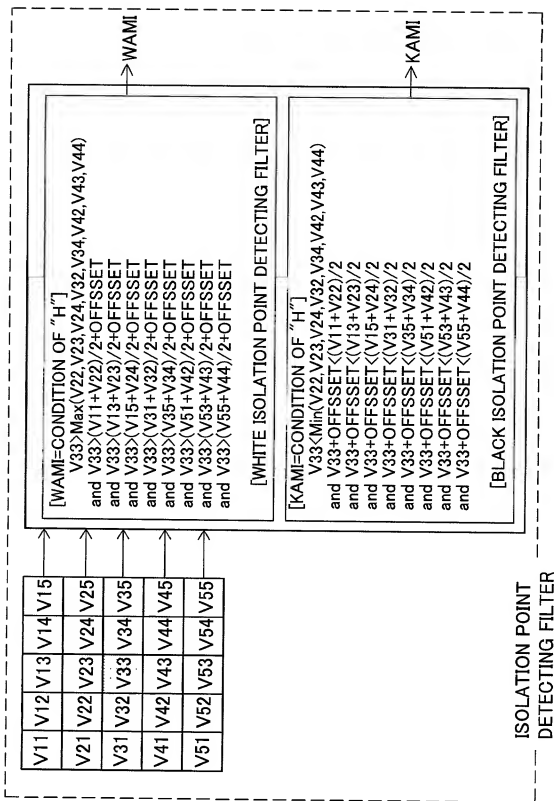


FIG. 11

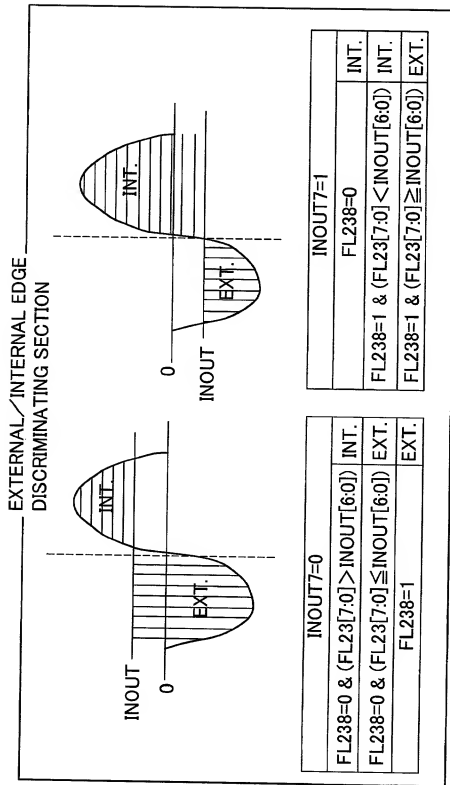


FIG. 12

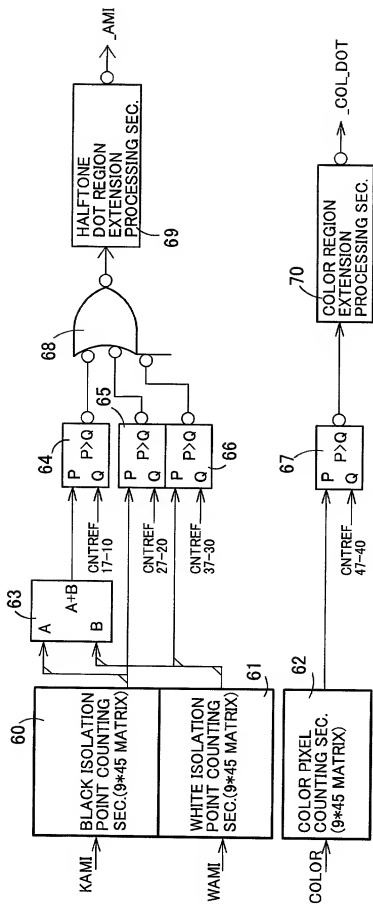


FIG. 13

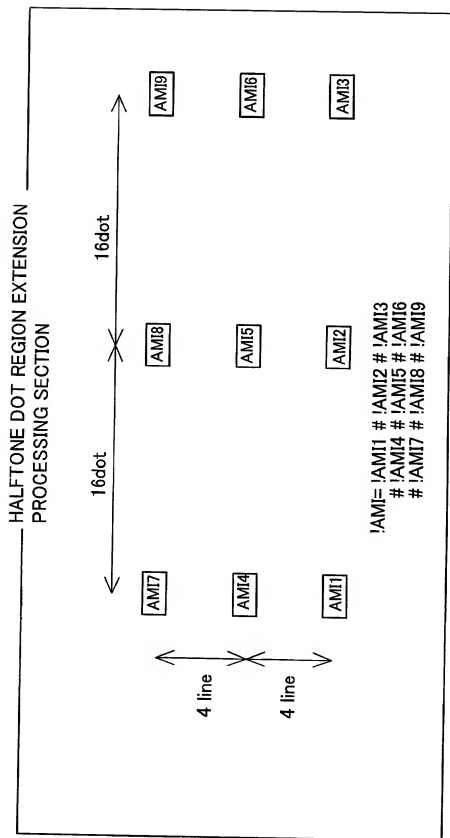


FIG. 14

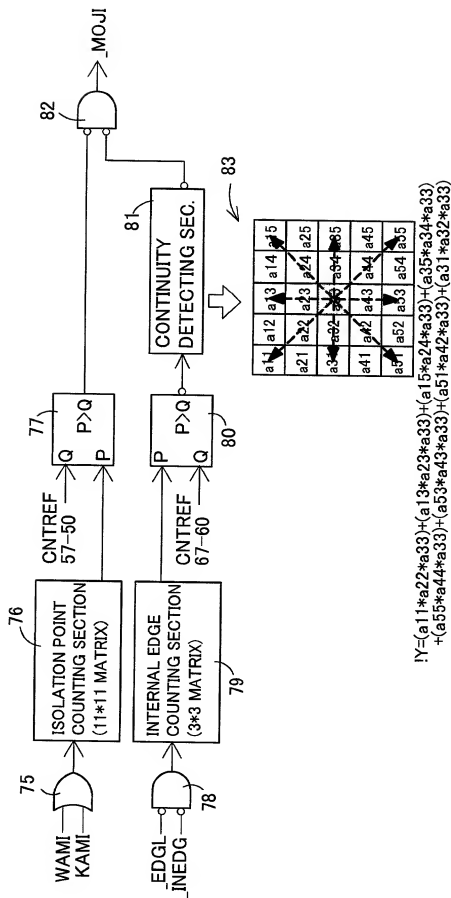
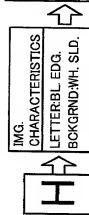
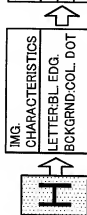


FIG. 15



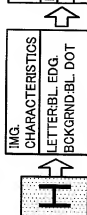
DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	1 1 - 1 0 1
INT. EDG	1 1 - 0 0 0
SLD.	1 1 - 1 1 1

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	1 NO 1
THRU	2 NO 1
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	1 NO 1
THRU	2 YES 0
SMTH.	0 NO 1



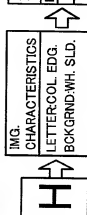
DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	0 0 0 1 0 1
INT. EDG	0 0 0 0 0 1
SLD.	0 0 1 - 1

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	2 NO 1
THRU	1 THRU 2
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	2 NO 1
THRU	2 YES 0
SMTH.	0 NO 1



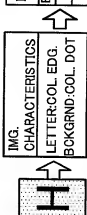
DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	1 0 - - -
INT. EDG	1 0 - - -
SLD.	1 0 - - -

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	0 NO 1
THRU	1 SMTH. 0
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	0 NO 1
THRU	2 NO 1
SMTH.	0 NO 1



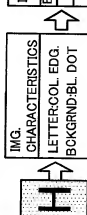
DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	1 1 - 1 0 1
INT. EDG	1 1 - 0 0 1
SLD.	1 1 - 1 1 1

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	1 NO 1
THRU	2 YES 0
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	1 NO 1
THRU	2 YES 0
SMTH.	0 NO 1



DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	0 0 0 1 0 1
INT. EDG	0 0 0 0 0 1
SLD.	0 0 1 - 1

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	2 NO 1
THRU	2 YES 0
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	2 NO 1
THRU	2 YES 0
SMTH.	0 NO 1



DISCRIMINATION SIGNAL	
IMG. AREA	COOL-DOT-AMI MOUJI-INEDG EDG BLACK
EXT. EDG	1 0 - - -
INT. EDG	1 0 - - -
SLD.	1 0 - - -

MTF ONTL. SIG. FOR CMV	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	0 NO 1
THRU	1 SMTH. 0
SMTH.	0 NO 1
MTF ONTL. SIG. FOR K	
BASE PROCES	CMPX1-0 EDG ENHANC
PROCES	0 NO 1
THRU	2 NO 1
SMTH.	0 NO 1

FIG. 16

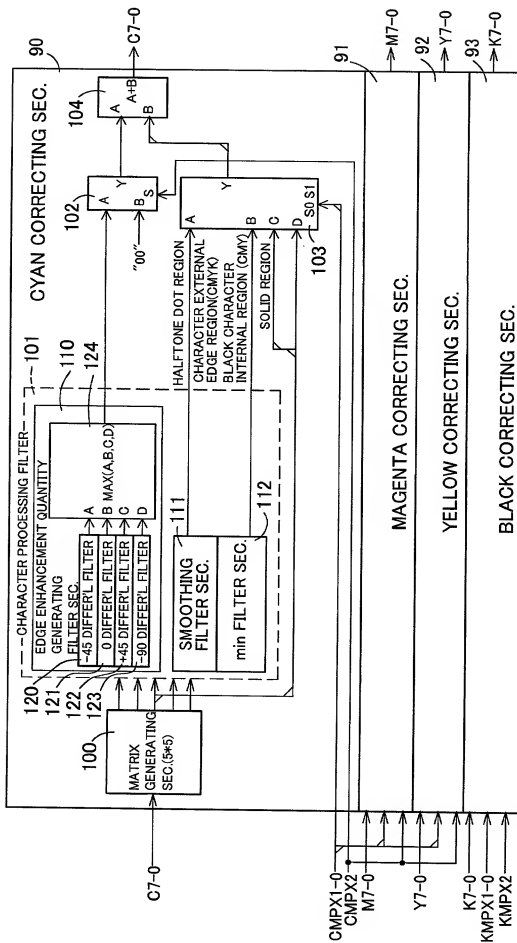


FIG. 17

-45 DEGREE DIFFERENTIAL FILTER

1	0	0	0	0
0	0	0	0	0
0	0	-2	0	0
0	0	0	0	0
0	0	0	0	1

FIG. 18

0 DEGREE DIFFERENTIAL FILTER

0	0	0	0	0
0	0	0	0	0
1	0	-2	0	1
0	0	0	0	0
0	0	0	0	0

FIG. 19

+45 DEGREE DIFFERENTIAL FILTER

0	0	0	0	1
0	0	0	0	0
0	0	-2	0	0
0	0	0	0	0
1	0	0	0	0

FIG. 20

+90 DEGREE DIFFERENTIAL FILTER

0	0	1	0	0
0	0	0	0	0
0	0	-2	0	0
0	0	0	0	0
0	0	1	0	0

FIG. 21

SMOOTHING FILTER

1	2	2	2	1
2	4	4	4	2
2	4	4	4	2
2	4	4	4	2
1	2	2	2	1

FIG. 22

min FILTER

a11	a12	a13	a14	a15
a21	a22	a23	a24	a25
a31	a32	a33	a34	a35
a41	a42	a43	a44	a45
a51	a52	a53	a54	a55

$$\rightarrow a33 = \min(a11, a12, a13, a14, a15, a21, a22, a23, a24, a25, a31, a32, a33, a34, a35, a41, a42, a43, a44, a45, a51, a52, a53, a54, a55)$$

FIG. 23

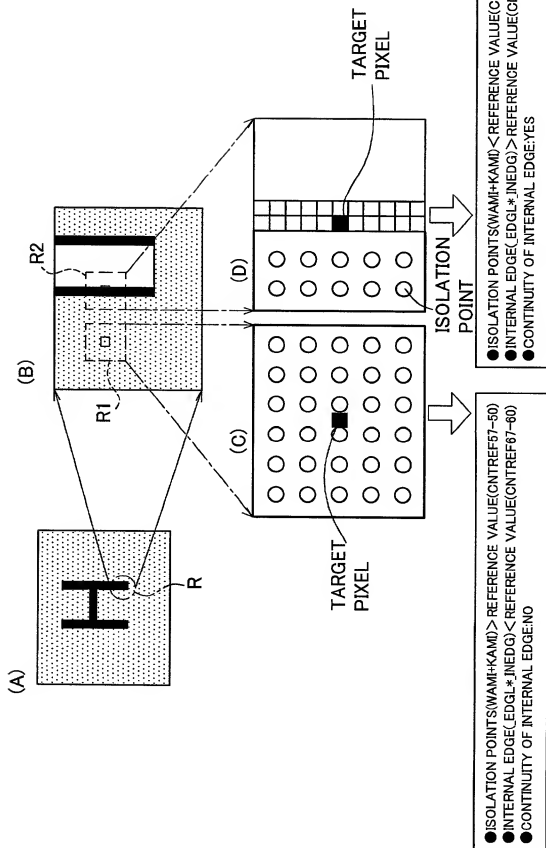
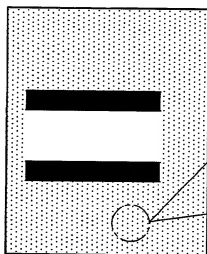


FIG. 24A

FIG. 24A

BLACK HALFTONE DOT INTERNAL
BLACK CHARACTER IMAGE



(DISCRIMINATED AS BLACK
HALFTONE DOTS)
CMY : SMOOTHING PROCESSING
K: SMOOTHING PROCESSING

(ERRONEOUSLY DISCRIMINATED AS
BLACK CHARACTER)
CMY: MIN PROCESSING
K: EDGE ENHANCEMENT PROCESSING

(DISCRIMINATED AS COLOR
HALFTONE DOTS)
CMY: SMOOTHING PROCESSING
K: SMOOTHING PROCESSING

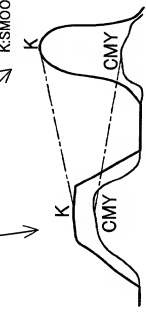
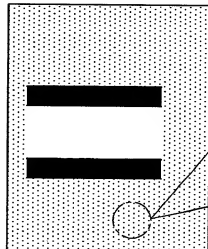


FIG. 24B

COLOR HALFTONE DOT INTERNAL
BLACK CHARACTER IMAGE



(ERRONEOUSLY DISCRIMINATED
AS COLOR CHARACTER)
CMY : EDGE ENHANCEMENT
PROCESSING
K: EDGE ENHANCEMENT
PROCESSING

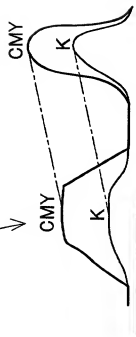


FIG. 25

